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THE PLANT DISEASE BULLETIN

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THE PLANT DISEASE SURVEY

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THE PLANT DISEASE BULLETIN

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THE PLANT DISEASE SURVEY

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CEREAL AND FORAGE CROPS

WHEAT

Bunt caused by Tolletia laevis and T. tritici.

Ohio: This trouble has been conspicupus by its absence this year and few fields were found with more than a trace of stinking smut. (Clayton, July 15).

Indiana: Local; not as much as in previous years. (Jackson, July 15).

Nebraska: Slight general infection throughout the state. Heavier than last year. One county reports 20% infection. (Goss, July 15).

Kansas: Stinking smut or bunt is quite generally distributed over the state again this year and is serious in some of the Kanred fields sown with smutty untreated seed. (Parker, Cereal Courier 13: 125. July 10).

California: Bunt was found in spots where the seed wheat had not been treated, one field being found with 65% but as a rule the attack is reduced from that of last year. Seed treatment is more generally practiced. The average loss for the state may be given as 1.5%. (Mackie, July 1).

Loose smut caused by Ustilago tritici.

Two additional reports on loose smut have been received as follows:

Oklahoma: Loose smut of wheat has caused a loss of between 1 and 2%. (Stratton, June 27).

Ohio: The average for the state has been about 2% with certain varieties showing much more. For the pedigreed wheats the following are the averages secured over the state: Portage 5%, Gladden 2%, and Trumbull less than 1%. This would indicate that the Portage was susceptible to loose smut and that the Trumbull is very resistant. Of the common varieties Red Wave is probably the most susceptible to loose smut. Counts of 8-12% are common with this variety. (Clayton, July 15).

Stem rust caused by Puccinia graminis

Connecticut: No complaints. (Clinton, July 15).

New Jersey: Rare. (Cook, July 15).

West Virginia: A rather interesting feature was the distribution of black stem rust. In Pocahontas County the stem rust was very slight and mostly in the uredinial stage; increasing in severity as I traveled towards the barberry section in Monroe County. At the lower end of the county the infection was severe and in the black stage. (Berg, July 6).

South Carolina: Present, damage slight. (Ludwig, July 15).

Oklahoma: The black rust of wheat was not found to be very prevalent, but caused serious loss to one field near Oklahoma City. (Stratton, June 27).

Ohio: Stem rust appeared in Ohio about June 10. Subsequent to that date practically every field entered showed a sprinkling of stem rust, rarely enough to do damage, however. Stem rust did very severe damage in one section of Ohio, however, thus in Ross and Pike Counties many fields were ruined by this disease. The rust was locally severe elsewhere in the state. Many people made careful search for barberries near these areas where stem rust was severe, but all reported that they were unable to find any barberries. Question marks regarding the relationship of barberry to stem rust in Ohio are numerous this year. (Clayton, July 15).

Michigan: Southeastern Michigan: Monroe County, slight if any; Lenawee County, limited outbreaks; damage 5%. Southwestern Michigan: Very slight, except in direct relation to barberries, where reduction in yield was 40%. Northern and central parts of Lower Peninsula: Slight. Upper Peninsula: Severe. Loss in general 15%. (Coons, July 15).

Wisconsin: Widespread and doing considerable damage, especially to spring wheat. Less than 1920. (Vaughan, July 15).

North Dakota: Miss W. Weniger visited the station June 28. She found a few pustules of stem rust on some of the wheat varieties. Even now, however, only traces of stem rust can be found after a very careful search. There is practically no stem rust in evidence. (Brinsmade, Cereal Courier 13: 143. July 20).

Nebraska: Degree of infection on plants less than 5%. General infection throughout state. No damage. (Goss, July 15).

Rust infection on barberries in this section (Douglas, Sarpy, and Cass Counties) is very light. The spread of rust from barberries to cereals in this area was very difficult to determine. Most of the barberries found were near Omaha, and very few grains are raised in that vicinity. The grain fields were usually some distance from the bushes. Consequently, it was hard to tell whether the rust which did occur on grains came from the barberries or from some other source. Stem rust was very general throughout the state on winter wheat which was too far advanced to become damaged by the rust. (Thiel, Cereal Courier 13: 140-141, July 20).

Washington: Have seen none and have had no reports. (Heald, July 15).
California: Puccinia graminis has caused considerable damage to wheat in the Sacramento valley. In some instances the damage amounted to 50%. The total loss is considerably less. (Mackie, July 1).

Leaf rust caused by Puccinia triticina.

Supplementary reports on leaf rust further testify to the fact that the disease was bad this year.

Kentucky: Very severe over all of state. Many fields show 80-100% infection of upper leaf at flowering time. Severity probably due to rapid spread during a warm period in March. (Valleau, July 1).
South Carolina: Present but not so abundant as usual. Damage slight, not over 3-5%. (Ludwig, July 15).
Oklahoma: The rusts have been very bad this year, especially the orange leaf rust, practically all fields of wheat being badly infected with it, usually 40-65% according to the chart. Kanred and Black Hull Turkey varieties showed usually about 10%, showing much resistance to the rust. (Stratton, June 27).
Ohio: The attack has been very severe and the farmers feel that it has cut the yield more than any other one thing in many cases. Certain it is that in those areas most affected they are only threshing out 3-10 bushels of wheat to the acre. Extreme southern Ohio was worst affected. (Clayton, July 15).
Michigan: Extremely common, loss probably small. (Coons, July 15).
North Dakota: There is considerable leaf rust in the winter wheat and in the varieties of common spring wheat. (Smith, Cereal Courier 13: 144. July 20).
Nebraska: Heavy infection. General throughout state. (Goss, July 15).
Washington: Present in severe form in some fields, especially severe in the club hybrids. (Heald, July 15).
California: Puccinia triticina was very abundant in nearly all wheat fields but was more pronounced in the Sacramento valley and Delta regions where damage resulted, especially in spots of lodged grain. (Mackie, July 1).

Stripe rust caused by Puccinia glumarum.

This rust has been reported from Washington, Oregon, and California as present in small amounts. At Moro, Oregon, D. E. Stephens made the observation that Fortyfold x Federation hybrids in the nursery were especially susceptible and at Chico, California, Florell reports the White Federation as susceptible and the Hard Federation as being rarely affected.

Scab caused by Gibberella saubinetii.

Scab has not been reported as especially serious thus far this season. Ohio, West Virginia, and parts of Pennsylvania have experienced local outbreaks but outside of these states no reports of serious damage have been received as yet.

New Jersey: Common, but not serious. (Cook, July 15).
Pennsylvania: Wheat scab this season is very common and has caused considerable

damage, as much as 4% of the grain being shriveled and undeveloped. Between the two diseases (scab and loose smut) one of the fields of the 'Pennsylvania 44' will be fit only for chicken feed. (Erie County) (Muncie, July 15).

Ohio: During the fore part of the season scab was very little in evidence. About June 15 this trouble became epidemic in Ohio, however, and since then has caused heavy loss with certain varieties. Of the pedigreed wheats, counts in many fields have shown that the Portage is very subject to scab attack while Gladden and Trumbull are not. In one case where three varieties were planted side by side in the same field the counts were: Portage 12%, Ohio Pride 2%, and Trumbull 1%. Fields of Portage with as many as 50% of the heads affected by scab have been reported, while the average for the state has been around 10%. Gladden under the same conditions has shown about 1.5-2% of scab and Trumbull about 1%. (Clayton, July 15).

Michigan: Trace only. (Coons, July 15).

Wisconsin: Not a large amount. Less than in 1920. (Vaughan, July 15).

Nebraska: Very slight, general infection. (Goss, July 15).

Root rots caused by various fungi.

Another case of foot rot associated with Ophiobolus has been reported by H. P. Barss from Oregon. The report is from a farm at Mosier where 50 acres are affected, 10 acres being entirely destroyed and 20 acres hardly worth harvesting. In 1919 the 10 acre tract yielded 40 tons of wheat hay.

According to C. W. Hungerford in a letter of July 23, both Fusarium and Helminthosporium have been secured from wheat plants affected with root rots collected at Rexburg, Idaho. Other outbreaks of root rot have been reported to Moscow but all of them except the one from Rexburg appear to be due to moisture or temperature conditions.

Anthracnose caused by Colletotrichum cereale.

Two more reports of anthracnose have been received, one from South Carolina and the other from Ohio. In the latter state, according to Dr. Detmers, it was generally present in fields in the central and southern portion of the state where leaf rust was severe.

Downy mildew caused by Sclerospora macrospora.

The following report of C. D. Sherbakoff gives the view point of another investigation on the newly discovered downy mildew of wheat in Tennessee:

"In my trip of May 29 to June 5, this year, Sclerospora macrospora was found in the neighborhood of Jackson, Union City, and Murfreesboro. The first two are the same points where Dr. Weston found the disease a few weeks before. Murfreesboro, however, is quite a distance from Jackson (about 50 miles east from Nashville) and is in a district of somewhat different type of agricultural practice and of a different type of soil. Considering that no special search for the disease was made, only ordinary standard wheat fields were examined, and keeping in mind that the disease had already been found in three different parts of the state, some of

which are located at a considerable distance and on different soil types, it is only natural to expect that the disease, newly discovered in the state is actually of a much wider occurrence than it had been observed so far. Nevertheless, the writer agrees with Dr. Weston that the disease does not appear to be alarming. The symptoms of the disease, as it was found on the farm of the Middle Tennessee State Normal School, are as follows: The affected plants are of dark green color, densely tufted, with twisted leaves mostly failing to head; the occasional heads that are produced are much larger than normal of the same variety, mostly sterile, often much pointed toward apex, with peduncle and upper part of the stem typically and conspicuously twisted into close zigzags; the stems and the upper leaves are abnormally thick and the latter full of oospores. The disease may possibly prove serious only during unusually wet seasons."

Disease caused by Leptosphaeria sp.

Concerning the symptoms of the newly discovered Leptosphaeria disease of wheat in California, W. W. Mackie reports as follows:

"The major attack of this fungus appears to be centered on the wheat plant just above the crown close to the surface or below the surface of the soil. There appears to be a girdling effect on the culm due to the appearance of a vertical lenticular shaped area of deadened affected tissue. In many cases the whole culm is decidedly browned and darkened, causing a weakening of the plants and in the worst cases resulting in death before the kernels have reached maturity. The disease appears to be more or less concentrated in localized spots, but the fields do not present true spotting such as is noticed in the attacks of take-all. Within a small area or spot there may be a large number or majority of the plants badly diseased by Leptosphaeria while dispersed among them may occur a larger or smaller number of plants apparently unaffected or affected to a very slight degree. These plants mature their crops but I believe the amount is greatly reduced even on those plants which appear to be normal in their behavior. I am inclined to believe there is a certain amount of attack from this disease upon the roots of the plants also."

RYE

Stem rust caused by Puccinia graminis.

West Virginia: Quite general although rye is not widely grown. (Giddings, July 15).
Indiana: Local; severe only in the vicinity of barberries. (Jackson, July 15).
Michigan: Heavy rusting; loss probably not more than 5%. Epidemics near barberry locations in southwestern Michigan with no general infection in district. (Coons, July 15).
Wisconsin: Less than usual. (Vaughan, July 15).
Nebraska: Trace, degree of infection less than 1%. General throughout the state. (Goss, July 15).

Stem rust was very general throughout the state on rye, but the infection was light. (Thiel, Cereal Courier 13: 141. July 20).

Anthracnose caused by Colletotrichum cereale.

South Carolina: Damage slight, but severe locally. (Ludwig, July 21).

BARLEY

Covered smut caused by Ustilago hordei.

Virginia: The fortieth-acre plats of barley treated for smut by Dr. G. M. Reed show as conclusive results as last year. All varieties in the varietal experiments for the current year were treated by the hot water method adn a general examination of these plats has shown but two smutted plants, both covered smut (U. hordei). The ten plats treated with formalin show occasional plants infected with loose smut (U. nuda) to three times as many infected with covered smut. The ten untreated plats have a heavy infection of both loose and covered smuts. (Taylor, Cereal Courier 13: 70. May 10).

Oklahoma: The smuts have also caused a loss to oats and barley. One field of barley showed a loss of 22% due to both smuts. (Stratton, June 27).

South Dakota: There is very little covered and loose smut - in fact I have seen no covered smut this year. (Evans, June 20).

Nebraska: General infection, slight. (Goss, July 15).

California: Hidden smut of barley is very rare in the state this year. In the Salinas valley and in the coast counties of southern California the attacks were the most severe amounting, however, to no more than 5% in the fields attacked. (Mackie, July 1).

Mexico: (Vicinity of Saltillo) Very heavy in some fields and some in nearly every field. Reduction in yield 5-20%. (Stakman and Christopher, July).

Loose smut caused by Ustilago nuda.

Ohio: Local; serious where it occurs, 2-27% of heads affected. First observed June 7, central Ohio. (Clayton, July 15).

Mexico: (Vicinity of Saltillo) Fairly prevalent, but not very abundant. Loss slight. (Stakman and Christopher, July).

Stem rust caused by Puccinia graminis.

Nebraska: General infection, especially heavy on late planted barley. Degree of infection 10-15%. (Goss, July 15).

California: Barley showed evidence of stem rust injury in places. (Mackie, July 1).

OATS

Smuts caused by Ustilago avenae and U. levis.

The report of Mackie concerning the non-propagation of oat smut in California is of interest.

Virginia: General and about the same as usual in severity. Winter varieties, all seed untreated, showed the following percentages in Experiment Station plots: Virginia Grey 15%, Fulghum 5%, Bancroft 5%, Appler 3%, Red Rust Proof 0. (Fromme, July 15).

West Virginia: Quite general this season and causing probably 5-10% loss. (Giddings, July 15).

Kentucky: Seven to fifteen per cent. Seed treatment not commonly practiced. Complete control with formaldehyde dip. (Valleau, July 15).

North Carolina: Common over entire state but not considered serious. Seed treatment is now in practice in nearly every section of the state and this disease is held in check. (Foster, July 15).

Louisiana: Infection very light, loss practically nothing. (Edgerton, July 15).

Texas: Less prevalent than last year. About 2% loss. (Taubenhaus, July 1).

Arkansas: Loose smut common, varying from trace to 25% in different fields. Covered smut not as common. Very little seed treatment. (Rosen, July 15).

Ohio: This generally is not severe though worse in some counties than others; the amount depending, it seems, on how general seed treatment has been in the past few years. Many treated fields have been seen where there was not a single smutted head. Other fields have been observed with as high as 8% smut. (Clayton, July 15).

South Dakota: Heads short and more smut than usual. (Bureau Crop Estimates Crop Notes, week ending July 2).

Nebraska: General infection, less than 1%. (Goss, July 15).

Kansas: Field inspection of Kanred wheat and Kansas Fulghum oats has been completed. When inoculated with smut, Kansas Fulghum remains much freer than most varieties of white oats, but several fields of Fulghum have been inspected which had 10% of smut, hence the variety can hardly be called highly resistant or immune. (Parker, Cereal Courier 13: 125. July 10).

Washington: Small amount of U. avenae on west side. About the average amount of U. levis in the Inland Empire. (Heald, July 15).

California: Oat smuts as usual were not found to any extent except in fields where eastern seed was sown. Apparently the climatic conditions prevailing over the state are unfavorable to smuts of oats. No oat seed is treated for smut as a rule. (Mackie, July 1).

Stem rust caused by Puccinia graminis.

Nebraska: Stem rust was very general throughout the state on oats. The infection was quite heavy. (Thiel, Cereal Courier 13: 141. July 20).

California: Stem rust has injured oats in the Sacramento valley, the damage being variable. (Mackie, July 1).

Crown rust caused by Puccinia coronata.

As in the case of the leaf rust of wheat this oat rust seemed more preva-

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lent than usual this year.

West Virginia: Causing considerable injury at the higher altitudes. (Giddings, July 15).
South Carolina: Present, damage slight. (Ludwig, July 1).
Louisiana: Infection very heavy. Decreased the crop about 20%. Due to the fact that a large amount of seed was shipped in from Texas for planting purposes. (Edgerton, July 15).
Texas: Red rust was exceedingly serious this year and reduced the yield about 10%. The Texas Red Rustproof was decidedly susceptible this year, due perhaps to the wet season. (Taubenhaus, July 1).
Arkansas: Common and rather severe on late maturing varieties. (Rosen, July 15).
Kansas: Crown rust of oats is unusually severe. Field inspection of Kansas Fulghum oats has been completed. This variety is heavily infected with crown rust and is as susceptible or more so than Red Rustproof. (Parker, Cereal Courier 13: 125. July 10)

Bacterial Halo spot.

Kentucky: Quite commonly observed but causing very slight damage. Controlled to trace with formaldehyde dip. Leaf blight, caused in part by halo spot, cause of remainder not determined, but not thought to be bacterial. Leaves turned yellow and died, both lower and upper. Quite common and injurious in spring oats killing portion of plants. (Valleau, July 15).
North Carolina: The bacterial blight of oats seems to be rather prevalent and widespread this season. (Foster, April 23).
Arkansas: Noticeable amount present on spring oats in seedling stage. (Rosen, July 15).
California: Halo blight of oats was found in the interior valleys and coastal regions as usual. The attack was common but appeared to cause very little damage. (Mackie, July 1).

Root rot(cause not determined).

Ohio: This apparently is a new disease of oats that has been brought to our attention for the first time tjis year. The field characteristics are a stunting and yellowing of the plants. It appears in irregular spots in the fields. When diseasd plants are pulled up the root system is found to be very scanty, with the few remaining roots in a much decayed condition. The trouble was reported by Mr. Cave, the Fulton County Agent. Growers having this disease state that the same spots appear in the fields each year that oats are planted. Other crops such as corn, wheat, and clover are not affected. (Clayton, July 15).

RED CLOVER

The Plant Disease Survey wishes to collect this season as much data as possible on the occurrence of red clover diseases. Collaborators and readers of this Bulletin are asked to make a special effort to collect and report information on diseases of this important hay and rotation crop. Our present knowledge of the clover disease situation is very inadequate. We have reason to suspect

that diseases are playing an important part in some of the clover failures that are occurring but definite data are not available. A case has just come to our attention of red clover at Arlington Farms, Virginia that is practically a failure on account of diseases, apparently anthracnose and a root rot of some kind being the principal causal factors.

Anthracnose caused by Gleosporium caulivorum was reported by John L. Sheldon from Central Village, Connecticut, May 4, as the first he had ever seen there. E. E. Clayton reported it as general but not serious in western and southwestern Ohio. First observed June 9 in western Ohio.

Wilt caused by Fusarium sp. was reported from Ohio by A. D. Selby on May 6 as follows: "Our advices the present season show the very serious killing out of red clover by what we reported last year (see Plant Disease Bulletin Supplement 15: 172) as 'Wilt, caused by a Fusarium sp.' reported by us from three counties in Ohio, 1920. The cultures obtained in both 1920 and 1921 have conformed very suggestively to the behavior of Fusarium roseum, and we have under way investigations which we trust will lead to the more complete identification of the causal organism and the possible inter-relations with scab of wheat and Fusarium root rot and ear mold of corn."

Crown rot caused by Sclerotinia trifoliorum was reported from Kentucky by W. D. Valleau as follows: "On April 29 Mr. Fergus, of this Station, called my attention to sweet clover which was dying, and on examination we found it to be very severely affected with the crown rot caused by Sclerotinia trifoliorum. Probably 5% of the plants were dead and in the neighborhood of 30% severe injury. Previous to this, we had found it on crimson clover, red clover, and alfalfa, causing very serious damage. I have also found it on sweet clover in Logan County. So far as we have been able to determine it has not been reported on sweet clover up to this time. At least we have been unable to find it in the literature, and I thought that the appearance of it might be of particular interest in view of the widespread use of sweet clover throughout this section of the country."

FRUITS

APPLE

Scab caused by Venturia inaequalis.

Additional reports have been received indicating the general prevalence and severity of scab, an abundance of infective material residing over from last year, a mild winter. Failure of growers to spray on account of small crops, and the favorable scab weather of this season, are probably all factors that have combined to make this a bad scab year.

Connecticut: The worst outbreak in years. (Clinton, July 1).
Pennsylvania: First report Adams County, May 11. Very prevalent again this year. Will cause heavy damage even where there is no fruit. (Thurston, July 1).
Virginia: General on foliage this year. Very little fruit left on trees. Severity on leaves accounted for by general lack of spraying owing to frost damage. Scab began to appear on leaves early in May. (Fromme, July 15)
North Carolina: Worst I have seen in years, especially in the mountain counties.

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The fruit was all killed and very little spraying was done, except the dormant and pre-pink. Nearly all of the trees are defoliated by the prevalence of scab. (Foster, July 15)

Ohio: The epidemic is state wide now and the disease is present everywhere so far as we know. It is just beginning to be conspicuous on the leaves and fruit in extreme northern Ohio. The early infection on the fruit there was not severe except with the more susceptible varieties. (Clayton, July 15).

Illinois: Worse than usual on both foliage and fruit. This is due in part to the fact that most growers gave up spraying when they found that a very light crop was expected. (Anderson, July 1).

Wisconsin: Very bad on unsprayed or poorly sprayed orchards. (Vaughan, July 1).

Washington: General in western Washington. More in eastern Washington than any year since 1915. (Heald, July 1).

Blotch caused by Phyllosticta solitaria.

In North Carolina blotch is said to be common in some of the small orchards. In the southern part of Illinois it is causing considerable damage, according to Anderson, who says:

> "About as usual. Developed later on some varieties. Not a serious factor in northern Illinois. Very bad infection on orchards in south where many growers failed to spray on account of expectation of small crops. Apples in one orchard of Yellow Transparents were almost ruined."

Fire blight caused by Bacillus amylovorus.

Fire blight is said to be generally destructive in North Carolina and Wisconsin, more so in the latter state than had ever been noticed before, according to Vaughan. It is reported as locally serious in several other states. As with scab and other diseases, the general lack of interest in the care of trees is responsible for much of the damage due to fire blight.

Connecticut: More than the usual amount. (Clinton, July 1).

Pennsylvania: First report of twig blight in Center County May 16. Generally present but serious only locally. (Thurston, July 1).

Virginia: Not general nor of importance this year althought severe locally, particularly in extreme southwest. (Fromme, July 15).

North Carolina: Common and destructive over entire state wherever apples and pears are grown. Very destructive this year because of the lack of attention the trees have received since there is no fruit. (Foster, July 15)

South Carolina: Abundant, no estimate of damage. (Ludwig, July 15).

Ohio: This trouble is becoming more and more prominent over the entire state. Many large trees are seen that look brown because of the amount of twig blight, and - more serious -- many young trees are badly affected.

Illinois: Very serious in several localities. Developed later than usual this season, causing serious die-back of many trees especially in northeastern part of state. (Anderson, July 1).

Wisconsin: This disease is widespread and more destructive than ever seen before. Hold over cankers determined on Transcendent crab, also probable on McMahon and Wealthy. Orchards with Transcendent almost sure to be badly blighted. (Vaughan, July 1).

Frog-eye leafspot caused by Sphaeropsis malorum.

Considerable injury due to this disease has been reported from Connecticut, Southern Pennsylvania, and Virginia. In Pennsylvania it was first observed April 28, in Cumberland County.

Cedar rust caused by Gymnosporangium juniperi-virginianae.

Rust has been reported as general and severe in the parts of Virginia where cedars occur, and as less important than last year in Illinois. Although it was observed on cedars in South Carolina this spring, it has not been reported on apples, according to Ludwig.

Virginia: General and severe in sections where cedars occur. Unusually prevalent in Piedmont this year. First observed May 10, but severe infection came with rains late in May. (Fromme, July 15).

Powdery mildew caused by Podosphaera leucotricha.

Powdery mildew is reported from Pennsylvania, where it is locally severe, and from Washington, where it is said to be common in the central irrigated valleys and in the Coast country, and according to some growers is more abundant than usual.

Anthracnose caused by Neofabraea malicorticis.

The only report of this disease so far received is from Washington, where it is said to be fairly common west of the Cascades and severe in the White Salmon section.

PEACH

Brown rot caused by Sclerotinia cinerea.

The following additional reports of brown rot have been received:

Connecticut: Some injury to young twigs through blossom infection. (Clinton, July 1).

Pennsylvania: Reports few compared with last year. There are few peaches in the state and damage will be slight. (Thurston, July 1).

Virginia: One report from York County on green fruit following curculio injury. May 24. Also the only record of any peaches within the state this year. (Fromme, July 15).

Kencutky: No fruit. No twig blight observed. (Valleau, July 15).

North Carolina: Very destructive this year over entire state, in some instances destroying the entire crop. Found mainly in the small orchards where spraying is not practiced. The apothecia appeared early because of the mild winter and spring. (Foster, July 15).

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Arkansas: Not serious this year on peaches. (Elliott, July 15).
Illinois: None to date. Not as much on market peaches as usual. Very little twig infection observed. Some on Texas peaches in market. (Anderson, July 1).

Leaf curl caused by Exoascus deformans.

Arkansas is the only state in which leaf curl is said to be more severe than last year, although several report it as causing severe local damage.

Connecticut: A few complaints. (Clinton, July 1).
Pennsylvania: First report April 3, Arendtsville, Pennsylvania. Generally present in the state. Damage slight this year. (Thurston, July 1).
Kentucky: Present in usual amounts. (Valleau, July 15).
North Carolina: Common over entire state but more destructive in the Piedmont and Mountain counties, probably because of the cooler and moist climate. (Foster, July 15).
Arkansas: Much more severe than usual. Some trees practically defoliated. (Elliott, July 15).
Ohio: It is reported from a number of localities but does not seem to be doing serious damage. (Clayton, July 15).
Illinois: Serious in a few orchards. Not as bad as last year. (Anderson, July 1).
California: Generally prevalent, causing moderate damage. Observed in San Francisco Bay region, Santa Cruz and vicinity, Los Angeles and vicinity. (W. S. Fields, July).

Scab caused by Cladosporium carpophilum.

In North Carolina scab is said to be common wherever peaches are grown, in unsprayed or improperly sprayed, and especially in small orchards. The disease is abundant on the twigs, but is not causing serious injury, in Illinois, according to Anderson, who states also that it was commonly observed on Texas peaches in the market.

Bacterial spot caused by Bacterium pruni.

Only slight amounts of bacterial spot have appeared in Connecticut as yet. In Illinois, although not as important as last year, it is causing some defoliation, throughout the state, and is especially severe in Johnson County, according to Anderson. The weakening result of the freeze is thought to be responsible for the severity of the disease in Arkansas, where it is especially serious on year-old nursery stock.

FIELD AND VEGETABLE CROPS

BEAN

Bacterial blight caused by Bacterium phaseoli is reported as common but

causing slightly less loss than usual in Louisiana; and as unimportant in Wisconsin.

Anthracnose caused by Colletotrichum lindemuthianum - reported from Louisiana as follows: "Common and serious in some localities. The failure to raise a fall crop for seed increased the infection this season. (Edgerton, July 15).

Rust caused by Uromyces appendiculatus - reported from Louisiana as very common and destructive on certain varieties, especially some of the pole varieties. (Edgerton, July 15).

Mosaic (cause undetermined) - reported from Louisiana as very common on bush, pole, and Lima beans but apparently not causing very heavy loss except on occasional plants. (Edgerton, July 15).

CABBAGE

Black rot caused by Bacterium campestre.

Louisiana: Very common and very severe especially on the spring crop of cabbage. In places, whole fields rotted down. (Edgerton, July 15).

Texas: Prevalent; about 1% loss. (Taubenhaus, July 1).

Minnesota: I was in Plainview this summer and saw one field that I would estimate as a 95% loss; out of every 100 plants there were only 5 worth anything at all. I saw more or less loss in every field that I visited. (J. G. Leach. Minnesota Horticulturist 49: 169. June).

Soft rot caused by Sclerotinia libertiana.

Virginia: A soft rot due to Sclerotinia (probably libertiana) was quite destructive on cabbage in a home garden at Charlotte Court House. The heads were fairly well formed at the time. The plants had been brought from South Carolina. (Fromme, July 1).

Louisiana: Very common and causing serious loss. Counts in many fields showed a loss of from 1-20%. Average loss about 3-5%. (Edgerton, July 15).

PEANUT

Rust caused by Uredo arachidis.

This rust, to which J. C. Arthur called attention in a note in Science (Two destructive rusts ready to invade the United States. Science n. s. 51: 246-247. March 5, 1920) had previously been found in Florida by C. D. Sherbakoff. Regarding his discovery Sherbakoff writes July 16:

> "The rust was found August 30, 1918, in a field on the farm of the Florida Experiment Station, at Gainesville. Only about four or six plants were found to be affected, all in a close cluster. The variety was White Spanish. No other peanut plants affected with the rust were found either in the same field or in any other field, although fairly close attention was paid to it, at least during that

and the next season. The field was not harvested for some time after the rust was found, but no noticeable spread of the trouble was observed during the remainder of the season.

"The rust was examined with the microscope and found to resemble closely the one reported in literature. Due to the fact that the disease did not seem to be of any importance, under the conditions under which it was found, no further attention was paid to it except that some specimens were preserved and a watch was kept for its reappearance and spread.

"Immediately after reading the article in Science, some of the rusted peanut leaves were sent to Dr. Arthur for his examination. He replied that the rust collected by me was the same to which he made reference - Puccinia (Uredo) arachidis - and that he was glad to hear that the disease was apparently of no alarming importance under our local conditions.

"Recently hearing that Dr. Orton is interested in the rust, I have sent him some of the specimens with a brief statement in regard to the time and place of its finding."

POTATO

Late blight caused by Phytophthora infestans.

A report of the presence of this disease in the Hastings region in Florida was received from O. F. Burger in April. It has been found by field men of the potato wart survey in Pennsylvania in practically every section of the counties visited (Jefferson, Indiana, Somerset, Armstrong), and has also been reported from West Virginia. In the latter state it was first found about the first of July at Beverly in Randolph County, where it was said to be rather bad in one garden. A later report (July 19) from Giddings states that the disease is very prevalent at Davis and Thomas, both in Tucker County, with weather conditions favorable for a severe epidemic.

Early blight caused by Macrosporium solani.

West Virginia: Mr. Sherwood reports some potato fields in the northwestern part of the state as very badly diseases with the early blight. (Giddings, July 2).

Texas: Prevalent. About 1% loss. (Taubenhaus, July 1).

Stem rot caused by Rhizoctonia sp.

South Carolina: Present in abundance on northern seed shipped in for planting the early crop. May have been contributing cause for a rot of seed pieces in the ground with consequent failure of plants to come up in Charleston County. (Ludwig, July 1).

Texas: Prevalent. One per cent loss. (Taubenhaus, July 1).

South Dakota: Rhizoctonia has appeared in several potato fields, in one doing considerable damage. (Evans, June 28).

Arizona: Fifty to eighty per cent of plants infected in the Santa Cruz Valley,

Southern Arizona. First observed May 15, at Rillito Station. Dry weather; hot days and cold nights. Mostly Peerless planted in worst fields. In spite of efforts of County Agent and Pathologist, no treatment resorted to. (Brown, June).

Leaf roll (cause undetermined).

Leaf foll is prevalent in Erie County, Pennsylvania, according to J. H. Muncie, and apparently the amount has not been greatly reduced by the roguing of affected plants practiced last year. It is reported by field men of the potato wart survey in Pennsylvania as common in the sections visited - Jefferson, Indiana, Armstrong, and Somerset Counties. Its presence is also recorded from South Carolina and California. It is said by D. G. Milbrath to be severe throughout the latter state, causing 30% injury in Los Angeles County.

Tip-burn (non-parasitic).

The statement by B. F. Lutman of Vermont concerning the cause of tip burn is interesting:

Vermont: The secret of tip burn on the potato foliage is to be found in hydathodes or water pores. It will be recalled that while the plant can control the opening and closing of the stomata, the hydathodes remain open permanently and that the orifice of the hydathode is at least four times that of a stoma. The average leaflet shows about 70-80 of these organs grouped around the margin on the upper side and largely massed toward its tip end. A large marginal vein runs practically all around the leaf directly under these water pores. The death of this marginal vein is due to the loss of water from the pores over it and is indicated by a browning of the entire region, but particularly of the bast of this vein. This is the beginning of tip burn. Five or six of these large pores are grouped in a mass almost at the tip of each leaflet and the results are first evident there.

The demonstration is very simple on leaves treated as follows: Boil leaves for a few minutes in water, drain, soak for 12-24 hours in 95% alcohol and then in a 5% solution of sodium hydroxid, wash in water and neutralize with a little hydrochloric acid, place in 50% glycerine for 24 hours and then mount on a glass plate in pure glycerine. (Lutman, July).

West Virginia: Some tip burn. (National Weather and Crop Bulletin, week ending June 7).

Ohio: Tip burn seems to be almost epidemic this year and it is doing much damage. The southern half of the state is most affected at present but the trouble is present in northern Ohio. (Clayton, July 15).

South Dakota: Tip burn is very common in potatoes. (Evans, June 28).

Nebraska: Considerable tip burn and plants drying up rapidly in south. (Bureau Crop Estimates Crop Notes, week ending July 2).

Anthracnose caused by Colletotrichum atramentarium.

The following report of July 19 from N. J. Giddings regarding the occurrence of potato anthracnose in West Virginia is of interest:

"I found this disease causing quite a little injury in one field near Morgantown this spring. There is no doubt in my mind from all the evidence secured in the field, as well as in the laboratory, but that the Colletotrichum was the cause of the injury in this case. A similar injury was reported to be troublesome in some other gardens and Mr. Berg advised me that he saw the same thing in some other sections which he visited during June. I believe that this disease is quite prevalent, although probably it does not often cause sufficient injury and become so conspicuous as to direct attention to it. Pure cultures of the fungus were readily obtained."

Leaf blotch caused by Cercospora concors.

Leaf blotch of potato, which is apparently rather rare in the United States, was observed in West Virginia recently by Giddings, who says concerning it (July 19):

"I found the potato leaf blotch, Cercospora concors, in two gardens at Davis. The disease was quite prevalent in one garden and had evidently caused a large amount of injury. The badly affected leaves dropped off very easily and there were only a few leaves left near the tops of the plants. The disease was fully as bad in the part of the garden where there was no shade as it was in one place where there was a little shade. The variety of these potatoes was said to be Early Rose. In the other garden the variety was unknown and the disease was apparent only in some small spots. The two gardens were not near together."

Germination troubles.

Germination troubles similar to those reported in the July 1 issue of the Bulletin occur in Ohio and Wisconsin also, according to the following reports:

Ohio: A very common complaint now is "I have only 50 or 75% of a stand", Investigation of numerous cases of this kind has shown that the seed pieces which did not send up a shoot simply rotted in the ground. Since one often finds a field with a poor stand beside one with a good stand, both planted at the same time, the situation looks puzzling. However, it is generally the case that the field with the poor stand was plowed late or the soil otherwise treated so that it became very dry after planting. The extremely hot weather combined with this soil condition seems to be primarily responsible for the poor stand. (Clayton, July 15).

Wisconsin: Late potatoes making a poor growth since the soil has been dry practically ever since they were planted. Some seed is rotting and as a result the stand is spotted. (Crop Notes of the Bureau of Crop Estimates for week ending July 2).

TOMATO

Bacterial blight caused by Bacillus solanacearum.

South Carolina: Not reported but doubtless present. Greatest loss is due to

necessity of leaving tomatoes completely off infected soil. (Ludwig, July 15).

Mississippi: One field observed at Poplarville, Pearl River County, with a trace of bacterial blight. (Neal, July 15).

Fusarium wilt caused by Fusarium lycopersici.

South Carolina: Present, local. Problem met with resistant varieties. Loss not estimated. (Ludwig, July 15).

Mississippi: Tomato wilt occurred in about the same amount as last season. First reported from Utica, Mississippi on May 25. Large quantities of wilt resistant seed was again distributed to club girls, county agents, and other individuals. We are expecting satisfactory reports from these trials as soon as the harvest season is complete. (Neal, July 15).

Arizona: Reported from Winkleman, June 3, and St. David, June 27. Serious at Winkleman. Weather very dry; hot days and cold nights. (Brown, June 27).

Buckeye rot caused by Phytophthora terrestris.

According to F. J. Pritchard buckeye rot is developing to a serious extent in a planting of tomatoes on the Arlington Experiment Farm of the United States Department of Agriculture. The disease is also reported from Tennessee by C. D. Sherbakoff as follows (July 25):

> "In October, 1920, I found on the local market at Knoxville some tomato fruit affected with an injury that resembled a very early infection with buckeye rot fungus. However, as no fungus could be isolated from the fruits, the matter was left until this season. Today I examined a small tomato field on the farm of the Tennessee Experiment Station and found at least 5% of the fruit affected with buckeye rot, in all stages from recent infection to complete decay. The fruits completely invaded by the fungus, when found on the ground early in the morning, were covered with a luxuriant growth of the white aerial mycelium of the fungus. When specimens of the rot were shown to several men at the Station they stated that it had been observed in their home gardens. This would indicate that the disease is not uncommon and may be found in many other parts of the state."

Leaf spot caused by Septoria lycopersici - local occurrences of this disease have been reported from Pennsylvania and Mississippi, and it is said to be abundant in South Carolina.

Early blight caused by Macrosporium solani - I. C. Jagger observed this disease in seedbeds at Palmetto, Florida in the early part of March. A recent report from West Virginia indicates that it occure to a considerable extent in the northwestern part of that state. In Mississippi, according to D. C. Neal, the season has been so dry that there is very little early blight infection.

Blossom-end rot (non-parasitic) - Dry weather in South Carolina and Mississippi has caused a rather sericus development of blossom-end rot, according to collaborators in those states. In South Carolina the damage is estimated at 5-10% at present, but recent rains will probably check further increase. Heavy applications of nitrogenous fertilizers apparently aggravate the severity of the disease in Mississippi.

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